CLAIMS

1°) An isolated peptide, characterized in that it has the following formula:

X1-X2-X3-X4-X5-X6-X7-X8-X9,

wherein:

- X1 is absent or represents an amino acid selected in the group consisting of non-charged polar amino acids and non-polar amino acids,
- X2 is absent or represents an amino acid selected in the group consisting of acidic amino acids, non-charged polar amino acids and non-polar amino acids,
- X3 is selected in the group consisting of basic amino acids, non-charged polar amino acids and non-polar amino acids,
- X4 is W,
- X5 represents an amino acid selected in the group consisting of A, V, L, I, P, W, M and C,
- X6 is selected in the group consisting of non-polar amino acids,
- X7 is a basic amino acid
- X8 is selected in the group consisting of basic amino acids and non-charged polar amino acids and
- X9 is absent or represents an amino acid selected in the group consisting of basic amino acids and non-polar amino acids.

2°) The isolated peptide according to claim 1, characterized in that it is selected in the group consisting of the following pro-apoptotic peptides:

- Peptides of 6-9 amino acids wherein X5 = I, L, A;
- Peptides of 6-9 amino acids, wherein X1 is absent or represents I, V, T, X2 is absent or represents E, X3 =T, S, R, N, X4 =W, X5 =I, A, X6 =L, V, X7 =R, X8 =H, N, X9 is absent or represents P;
- Peptides of 6-9 amino acids, wherein X3 = T, X5= I, X6 =L and X8 = H.

3°) The isolated peptide according to claim 1, characterized in that is selected in the group consisting of the following pro-apoptotic peptides:

- Peptides of 6-9 amino acids wherein X5 = I, L, A;

- Peptides of 6-9 amino acids, wherein X1 is absent or represents I, V, T, X2 is absent or represents E, X3 =T, S, R, N, X4 =W, X5 =I, A, X6 =L, V, X7 =R, X8 =H, N, X9 is absent or represents P;

- Peptides of 6-9 amino acids, wherein X3 = T, X5= I, X6 =L and X8 = H,

with the proviso that said peptide is not the peptide having the following sequence: IETWILRHP.

4°) The isolated peptide according to claim 1, characterized in that said peptide has the following sequence: IETWILRHP.

5°) The isolated peptide according to any of claims 1 to 4, characterized in that said peptide is associated with or conjugated to another peptide or protein such as a carrier protein or non-peptide molecule and/or incorporated into a suitable support.

6°) Isolated and purified polynucleotide, characterized in that it encodes a peptide according to anyone of claims 1 to 4.

7°) Recombinant vector, characterized in that it comprises a polynucleotide according to claim 6.

8°) Recombinant vector according to claim 7, characterized in that it further comprises a sequence encoding a secretory pathway targeting protein.

9°) Recombinant vector according to claim 8, characterized in that said sequence encoding a secretory pathway targeting protein is selected in the group consisting of a sequence encoding an endoplasmic reticulum targeting signal peptide such as a translocation signal peptide and more specifically the prM translocation signal peptide corresponding to fragment 95-114 of the C protein of a flavivirus and more preferably of a dengue (DEN) virus and a membrane-anchoring signal peptide that targets glycoproteins to the plasma membrane, such as the fragment 1-118 of CD72 (cytosolic tail of a type II integral membrane glycoprotein).

10°) Recombinant vector according to claim 7, characterized in that it further comprises a marker.

11°) Recombinant vector according to claim 10, characterized in that said marker gene is the *enhanced green fluorescent protein* (EGFP).

12°) Recombinant vector according to claims 7 to 11, characterized in that it further comprises appropriate transcriptional and translational control elements.

13°) Recombinant vector according to claim 7 wherein the polynucleotide encodes the peptide having the following sequence: IETWILRHP.

14°) Recombinant vector according to claim 13 wherein it corresponds to plasmid [95-114]EGFP[M32-M40]DEN-2 which has been deposited at the Collection Nationale de Cultures de Microorganismes, 28 Rue de Docteur Roux, F-75724 Paris Cedex 15, on March 29, 2002 under the number I-2829.

15°) Recombinant vector according to claim 13 wherein it corresponds to plasmid Trip Δ U3 CMV [95-114]EGFP[237-245]DEN-2, which has been deposited at the Collection Nationale de Cultures de Microorganismes, 28 Rue de Docteur Roux, F-75724 Paris Cedex 15, on May 23, 2003, under the number I-3032.

16°) Host cell, characterized in that it is transformed by a recombinant vector according to anyone of claims 7 to 15.

17°) Polyclonal or monoclonal antibodies raised against a peptide of claims 1 to 5.

18°) Pharmaceutical composition comprising an effective amount for inducing apoptosis in cancer cells of a pro-apoptotic peptide according to claims 1 to 4, the polynucleotide encoding the same according to claim 6 or the recombinant vector according to claims 7 to 15, a targeting substance to the target cells and at least one pharmaceutically acceptable carrier.

19°) Pharmaceutical composition according to claim 18, characterized in that said targeting substance may be any ligand which can bind specifically to the target cells.

20°) Method of screening for molecules capable of modulating apoptosis comprising the steps of:

- introducing the peptide according to claims 1 to 4, a polynucleotide according to claim 6 or a recombinant vector according to claims 7 to 15 into a cell,
- contacting said cell with the molecule to be screened and
- detecting the presence or absence of apoptosis.

21°) Use of the peptide according to claims 1 to 4, the polynucleotide of claim 6 or the recombinant vector according to claims 7 to 15 for the preparation of a medicament for the treatment of cancers.

22°) Direct detection method of a flavivirus infection, characterized in that it comprises:

- contacting a biological sample to be analysed or a culture medium supposed to eventually contain flavivirus antigens with antibodies according to claim 17, optionally labelled and,

- detecting the antigen-antibody complex eventually formed by any means.

23°) Serological detection of a flavivirus infection, characterized in that it comprises:

- contacting a biological sample with a solid support on which peptides according to claims 1 to 4 are bound, and

- detecting the eventually formed antigen-antibody complexes by any means.